**CDC Key Messages**

**March 29, 2013**

**“Increasing exposure to antibody-stimulating proteins and polysaccharides in vaccines is not associated with risk of autism”**

This article is available online in the [*Journal of Pediatrics*](http://www.jpeds.com).

**Study Summary**

* This study is the first of its kind to evaluate the issue of “too many vaccines too soon” and the development of autism.
* The findings showed that the amount of antigens from vaccines received on one day of vaccination or in total during the first two years of life is not related to the development of autism spectrum disorder (ASD) in children.
  + Antigens are substances in vaccines that cause the body’s immune system to produce antibodies to fight disease.
* The study found that the total amount of antigens from vaccines received was the same between children with ASD and those that did not have ASD.
* The study also evaluated two sub-categories of ASD – autistic disorder and ASD with regression – and found no relationship with the number of vaccine antigens received in either of these categories.
* A [2004](http://www.iom.edu/reports/2004/immunization-safety-review-vaccines-and-autism.aspx) comprehensive review by the Institute of Medicine (IOM) concluded that there is not a causal relationship between certain vaccine types and autism, and this study strengthens that conclusion.
* This study’s results cover a broader range of vaccine antigen exposures than the typical child would be exposed to today. The results provide relevant data for the current immunization schedule.

**Study Methods**

* Researchers collected data from 3 managed care organizations and evaluated the number of vaccine antigens received in the first two years of life in a group of 256 children with ASD compared with 752 children without ASD.
  + Children eligible for the study were born between January 1, 1994 and December 31, 1999. They were 6-13 years old at the time of data collection.
* The researchers determined each child’s total vaccine antigen exposure by adding the number of different antigens in all vaccines each child received in one day, as well as all vaccines antigens each child received up to 2 years of age. This information was recorded in immunization registries and medical records.
  + Different types of vaccines, even against the same infectious agents, contain varying amounts of antigens. This research acknowledged that simply counting the number of vaccines received does may not adequately reflect how different vaccines and vaccine combinations stimulate the immune system.
  + The number of vaccine antigens has decreased in recent years. Although the routine childhood vaccine immunization schedule in 2013 contains more vaccines than the schedule in the late 1990s, the maximum number of vaccine antigens that a child would be exposed to by 2 years of age in 2013 is 315, compared with several thousand in the late 1990s. This is due to changes in the vaccines.
  + For example, the older whole cell pertussis vaccine causes the production of about 3,000 different antibodies, whereas the newer acellular pertussis vaccines stimulate the production of 6 or fewer different antibodies.

**Questions about Vaccines and Autism**

* Ensuring vaccine safety is important for all vaccines. The United States currently has the safest, most effective vaccines in history. For more than 30 years, a vaccine safety system has been in place to ensure that vaccines are as safe as possible. CDC, along with other federal agencies, is committed to assuring the safety of vaccines through rigorous pre-licensure trials and post-licensure monitoring.
* CDC knows that some parents are concerned that there is a link between vaccines (like MMR) or certain vaccine ingredients (like thimerosal) and autism. However, several large and reliable studies of MMR vaccine have been done in the U.S. and other countries. None has found a link between autism and the MMR vaccine. Additionally, scientific research does not show a link between thimerosal in vaccines and autism.  Although thimerosal was taken out of childhood vaccines in 2001, autism rates have continued to go up.
* Although scientific evidence shows that vaccines do not cause autism, a 2012 HealthStyles survey showed that just over 15% of parents are concerned that they do.
* Data from a 2012 survey found that 22.8% of parents are concerned that children receive too many vaccines at one doctor’s visit, and 22.8% of parents are concerned that children receive too many vaccines by the age of 2.
* More than 1 in 10 parents of young children surveyed refuse or delay vaccinations in the belief that delaying vaccinations is safer than following the Centers for Disease Control and Prevention’s (CDC) immunization schedule (<http://www.cdc.gov/vaccines/parents/downloads/parent-ver-sch-0-6yrs.pdf>). Children do not receive any known benefits from following schedules that delay vaccines. We do know that delaying vaccines puts children at known risk of becoming ill with vaccine-preventable diseases.
* However, CDC research with parents regarding their vaccine attitudes and behaviors has found that the vast majority of U.S. parents believe vaccines are important, and they do vaccinate their children.
* Coverage for most of the routine childhood vaccines remain at or over 90% in children aged 19-35 months.
* CDC and other agencies and organizations continue to conduct research to learn more about the causes of autism. Many doctors believe that genetics likely play a strong role.
* Parents also should talk to their child’s health care professional immediately about any concerns that may arise as they observe their child’s development. By working together, parents and health care professionals can act early not only to identify developmental problems but also to take action to help children reach their full potential.

**More Resources**

* [CDC Studies on Vaccines and Autism Adobe PDF file [PDF - 30 KB]](http://www.cdc.gov/vaccinesafety/00_pdf/CDCStudiesonVaccinesandAutism.pdf)
* [2013 IOM Report on Childhood Immunization Schedule and Safety](http://www.iom.edu/Reports/2013/The-Childhood-Immunization-Schedule-and-Safety.aspx)
* [Autism Spectrum Disorders: What You Should Know](http://www.cdc.gov/ncbddd/autism/index.html)
* [Timeline: Thimerosal in Vaccines (1999--2010)](http://www.cdc.gov/vaccinesafety/Concerns/thimerosal/thimerosal_timeline.html)
* [Frequently Asked Questions about Thimerosal](http://www.cdc.gov/vaccinesafety/Concerns/thimerosal/thimerosal_faqs.html)
* [Measles, Mumps, and Rubella (MMR) Vaccine](http://www.cdc.gov/vaccinesafety/Vaccines/MMR/index.html)